UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,778	01/10/2001	Arnaud Gueguen	201587US2	6492

22850	7590	10/10/2003		

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Office Action Summary	**Application No.** 09/756,778	**Applicant(s)** GUEGUEN, ARNAUD	
		Examiner Joseph D. Torres	**Art Unit** 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>22 September 2003</u> .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-23</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-23</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on <u>22 September 2003</u> is: a)☒ approved b)☐ disapproved by the Examine

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☒ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

Drawings

1.   The proposed drawing corrections filed 22 September 2003 are approved.

Corrected drawings are required in reply to the Office action to avoid abandonment of

the application. The correction to the drawings may not be deferred.

Specification

2.   In view of correction to the Abstract, the Examiner withdraws the previous

rejection to the abstract.

The objection to the Title is maintained. In the previous Office Action, the Examiner

objected to the title for having the word title in it and explicitly stated that the word "Title"

should be removed from the title. The Applicant has removed the title in the current

Office Action. Hence, the Examiner now objects to the specification for not having a

title.

Response to Arguments

35 U.S.C. § 112 rejections

3.   Applicant's arguments with respect to the 35 U.S.C. § 112 rejections of claims 1-

23 filed 22 September 2003 have been fully considered but they are not persuasive.

The Applicant contends, "it is noted that the latest version of MPEP §2172.01 (Rev. 1, Feb. 2003) does not use the term 'incomplete' and emphasizes that it is only with regard to 'essential elements of the invention defined by applicant(s) in the specification' that a rejection under the second paragraph of 35 U.S.C. §112 may be made. Here, the specification contains no such indication of 'essential elements' as to specific associations or actual relationships questioned in the outstanding Action". The Examiner asserts that 35 U.S.C. §112, first paragraph requires that all elements of the claims be taught in the specification in a manner which would enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, that is; 35 U.S.C. §112, first paragraph requires that an "indication of 'essential elements'" be explicitly taught in the specification.

The Applicant contends, "Further in this regard, MPEP §2173.04 (Rev. 1, Feb. 2003) reminds examiners that 'breadth of a claim is not to be equated with indefiniteness' (citing In re Miller, 441 F.2d 689, 169 USPQ 597 (CCPA 1971)). This section further reminds all examiners that if the scope of the subject matter embraced by the claims is clear". The claim was not rejected for undue breadth; it was specifically rejected for omitting elements, amounting to a gap between the elements, which renders the claim indefinite, i.e., unclear. Specifically, claim 1 recites, "the said plurality of elementary coding steps with association with a plurality of adapted interleaving and deinterleaving steps" in lines 12-14. It is unclear what "elementary coding steps" and what

"interleaving and deinterleaving steps" the Applicant is referring to and further more it is

unclear how any association can exist between two elements that are unclearly defined.

The Examiner disagrees with the applicant and maintains the 35 U.S.C. § 112 rejections

of claims 1-23, as indicated below.

Prior Art rejections of claims 1-23

4.   Applicant's arguments with respect to the Prior Art rejections of amended claims

1-4, 6 and 7 filed 22 September 2003 have been fully considered but they are not

persuasive.

In response to applicant's argument that the references fail to show certain features of

applicant's invention, it is noted that the features upon which applicant relies (i.e., "On

the other hand, the characteristic quantity of Claim 1 is further computed from these

weighted outputs (as, for instance, the mean, of the absolute values of the extrinsic

outputs, as stated in Claim 6) and has no equivalent quantity in Divsalar nor in the state

of the art") are not recited in the rejected claim(s). Although the claims are interpreted

in light of the specification, limitations from the specification are not read into the claims.

See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The

Examiner suggests that if the Applicant intends for characteristic quantity of Claim 1 to

be as argued in the current amendment, the Applicant should specifically claim those

elements that would define the characteristic quantity as intended. The Examiner

reiterates: Divsalar teaches calculating at least one characteristic quantity (L_{1k}, L_{2k} and L_{3k} in Figure 20B are log likelihood ratios that represents a ratio of the probability that a particular bit has a "1" value to the probability that the bit has a value of "0" hence log likelihood ratios are a characteristic quantity for a particular bit) from a set of weighted output information items generated by at least one elementary decoding step ($L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$ are a set of weighted output information items generated by at least one elementary decoding step; Note: Equation 30 in column 19 teach that $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$ are weighted by a factor $\alpha^{(m)}_1$, hence $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$ are a set of weighted output information items).

The Applicant contends, "Compounding these unreasonable characterizations as to the Claim 1 characteristic quantity is the assertion that L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ 'are used to configure the elementary decoders' and can be read as 'configuration parameters.' Where is the teaching to be found in Divsalar that L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ 'are used to configure the elementary decoders'". Webster's dictionary defines configure as "to set up for operation". Col 19, lines 25-33in Divsalar teach that L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are extrinsic information feedback to the decoder to improve error correction, i.e., they are used to set the decoder up to properly decode an incoming sequence, hence Divsalar teaches a decoded information quality parameter determination step for determining, from the said at least one characteristic quantity and at least one configuration parameter, a decoded information quality parameter.

The Examiner disagrees with the applicant and maintains all rejections of amended claims 1-4, 6 and 7. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that amended claims 1-4, 6 and 7 are not patentably distinct or non-obvious over the prior art of record in view of the reference, Divsalar, Dariush et al. (US 6023783 A) as applied in the last office action, Paper No. 9. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. Claim 1 cites, "the said plurality of elementary coding steps with association with a plurality of adapted interleaving and deinterleaving steps" in lines 12-14. The omitted elements are: the association or actual relationships between "the said plurality of elementary coding steps" and the "plurality of adapted interleaving and deinterleaving steps".

See Paper No. 9 for detailed action of prior rejections.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 cites, "the said plurality of elementary coding steps with association with a plurality of adapted interleaving and deinterleaving steps" in lines 12-14. The Applicant admits in the current amendment of Paper No. 11, "Here, the specification contains no such indication of 'essential elements' as to specific associations or actual relationships questioned in the outstanding Action". 35 U.S.C. §112, first paragraph requires that all elements of the claims be taught in the specification in a manner which would enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, that is; 35 U.S.C. §112, first paragraph requires that an "indication of 'essential elements'" be explicitly taught in the specification.

Claim 2-23 depend form claim 1, hence inherit the deficiencies of claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1-5, 7-10, 13, 14, 16 and 18-23 are rejected under 35 U.S.C. 102(e) as

being anticipated by Divsalar, Dariush et al. (US 6023783 A, hereafter referred to as

Divsalar).

35 U.S.C. 102(e) rejection of claims 1-4 and 7.

See Paper No. 9 for detailed action of prior rejections.

35 U.S.C. 102(e) rejection of claim 5.

L_{1k}, L_{2k} and L_{3k} in Figure 20B are log likelihood ratios that represents a ratio of the

probability that a particular bit has a "1" value to the probability that the bit has a value

of "0" hence log likelihood ratios are a characteristic quantity for a particular bit, hence

L_{1k}, L_{2k} and L_{3k} in Figure 20B are statistical quantities.

35 U.S.C. 102(e) rejection of claim 8.

Divsalar teaches a characteristic quantity determination step for calculating at least one

characteristic quantity from a set of weighted output information items generated by at

least one elementary decoding step (see Figure 20B in Divsalar; Note: steps used in the

weighted output information item which can be transmitted to one or more other

elementary decoding steps for generating are characteristic quantity determination

steps for calculating characteristic quantities, L_{1k}, L_{2k} and L_{3k} from a set of weighted

output information items, $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$, generated by at least one

elementary decoding step), and a decoded information quality parameter determination

step for determining, from the said at least one characteristic quantity and at least one

configuration parameter (see Figure 20B in Divsalar; Note: L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are

used to configure the elementary decoders, hence L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are

configuration parameters), a decoded information quality parameter associated with a

set of decoded information items corresponding to the said set of weighted output

information items (see Figure 20B in Divsalar; Note: L_k is a decoded information quality

parameter associated with a set of decoded information items corresponding to the said

set of weighted output information items).

35 U.S.C. 102(e) rejection of claims 9 and 10.

Note: the decoder of Divsalar in Figure 20B is iterative with feedback so that the

decoded information quality parameter is determined from previous calculations using

feedback from previous steps.

35 U.S.C. 102(e) rejection of claims 13.

Col 19, lines 25-33in Divsalar teach that L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are extrinsic information

feedback to the decoder to improve error correction, i.e., they are use to set the decoder

up to properly decode an incoming sequence, hence Divsalar teaches a decoded

information quality parameter determination step for determining, from the said at least

one characteristic quantity and at least one configuration parameter, characterizing the decoding conditions.

35 U.S.C. 102(e) rejection of claims 14.

Col 19, lines 25-33in Divsalar teach that L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are extrinsic information feedback to the decoder to improve error correction, i.e., they are use to set the decoder up to properly decode an incoming sequence, hence Divsalar teaches a decoded information quality parameter determination step for determining, from the said at least one characteristic quantity and at least one configuration parameter, characterizing the transmission conditions.

35 U.S.C. 102(e) rejection of claims 16.

Divsalar teaches a decoded information quality parameter determination step for determining, from the said at least one characteristic quantity and at least one configuration parameter (see Figure 20B in Divsalar; Note: L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are used to configure the elementary decoders, hence L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are configuration parameters), a decoded information quality parameter associated with a set of decoded information items corresponding to the said set of weighted output information items (see Figure 20B in Divsalar; Note: L_k is a decoded information quality parameter associated with a set of decoded information items corresponding to the said set of weighted output information items).

35 U.S.C. 102(e) rejection of claims 18 and 19.

Since the decoder of Figure 20B is a soft decoder, one of ordinary skill in the art at the time the invention was made would have known that each bit in a soft decoder is quantized to a multi-bit symbol representing the value of the bit, the multi-bit symbol representing fractions of the value of the originally sent value.

35 U.S.C. 102(e) rejection of claims 20.

See Figure 20B in Divsalar; Note: steps used in the weighted output information item which can be transmitted to one or more other elementary decoding steps for generating are characteristic quantity determination steps for calculating characteristic quantities, L_{1k}, L_{2k} and L_{3k} from a set of weighted output information items, $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$, generated by at least one elementary decoding step. Note: Equation 30 in column 19 teach that $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$ are weighted by a factor $\alpha^{(m)}_1$, hence $L_1(m+1)$, $L_2(m+1)$ and $L_3(m+1)$ are a set of weighted output information items).

35 U.S.C. 102(e) rejection of claims 21.

Col. 8, lines 25-30 in Divsalar teach steps for puncturing.

35 U.S.C. 102(e) rejection of claims 22.

See Figure 20B in Divsalar; Note: L_k is a decoded information quality parameter associated with a set of decoded information items corresponding to the said set of

weighted output information items that is a direct result of the weighted combination the

sets.

35 U.S.C. 102(e) rejection of claims 23.

The final decision in Figure 20B is a joint detection step since it is based on the joint

decision of all the decoders in Figure 20B and L_k is used as a control parameter in the

decision step for making a final decision.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Divsalar, Dariush et al. (US 6023783 A, hereafter referred to as Divsalar).

35 U.S.C. 103(a) rejection of claim 6.

See Paper No. 9 for detailed action of prior rejections.

35 U.S.C. 103(a) rejection of claim 17.

Divsalar teaches a decoded information quality parameter determination step for

determining, from the said at least one characteristic quantity and at least one

configuration parameter (see Figure 20B in Divsalar; Note: L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are

used to configure the elementary decoders, hence L_0, $L_1(m)$, $L_2(m)$, $L_3(m)$ are

configuration parameters), a decoded information quality parameter associated with a

set of decoded information items corresponding to the said set of weighted output

information items (see Figure 20B in Divsalar; Note: L_k is a decoded information quality

parameter associated with a set of decoded information items corresponding to the said

set of weighted output information items).

However Divsalar, does not explicitly teach the specific use of a look-up table.

The Examiner asserts that although Divsalar does not teach a particular means for

assigning values to the quality parameters as a function of the configuration parameters

and the characteristic quantities, Divsalar explicitly teaches that the quality parameters

are a function of the configuration parameters and the characteristic quantities, hence a

means for assigning values to the quality parameters as a function of the configuration

parameters and the characteristic quantities is required in the Divsalar patent. One of

ordinary skill in the art at the time the invention was made would have known that use of

look-up tables is a means for assigning functional values and in fact there is a subclass

714/759 dedicated to look-up tables, hence using look-up tables for assigning functional

values is an obvious engineering design choice.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teachings of Divsalar by including use of a look-up

table. This modification would have been obvious to one of ordinary skill in the art, at

the time the invention was made, because one of ordinary skill in the art would have

recognized that use of a look-up table would have provided a means for assigning functional values.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.
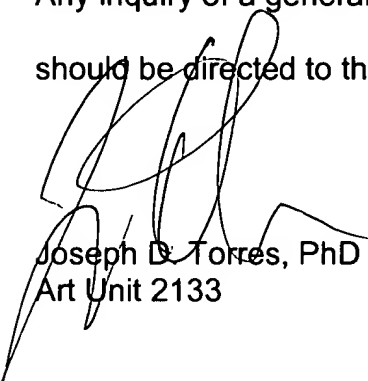
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066.

The examiner can normally be reached on M-F 8-5.If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached

on (703) 305-9595. The fax phone number for the organization where this application

or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703)-746-7240.

Joseph D. Torres, PhD
Art Unit 2133